

EXHIBIT C



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Haase, Richard A.

Filed: September 16, 1997

Title: Clarification of Water and
Wastewater

Serial No: 08/931,167

Group Art Unit: 1724

Docket No.: 400082-006

The Assistant Commissioner for Patents
Washington, D.C. 20231

AFFIDAVIT OF BILLY L. GIBSON

THE STATE OF TEXAS §
COUNTY OF HARRIS §

BEFORE ME, the undersigned authority, personally appeared BILLY L. GIBSON, who being by me duly sworn, stated as follows:

My name is BILLY L. GIBSON. I am of sound mind, capable of making this Affidavit and have personal knowledge of the facts stated herein.

BACKGROUND AND FACTORS DEMONSTRATING THAT THE TESTS OF APPLICATION WERE RUN AND WITNESSED BY INDIVIDUALS SKILLED IN THE ART OF WATER AND WASTEWATER TREATMENT

1. My educational background is: High School Diploma.

2. My work experience is:

A. **City of Marshall, Texas**

1987 - present

Water Treatment/Production Manager – Responsible for all supervisory and technical work pertaining to water treatment/wastewater treatment/industrial pretreatment/laboratory and mechanical maintenance of all facilities; responsible for the supervision of twenty-five employees; work assignments received directly from the Public Works Director; as department head

responsible for annual budget, expenditures, requisitions and T.N.R.C.C. and E.P.A. reports.

B. Harris County Utility District #5

1978 - 1986

Maintenance Man - Performed all required maintenance including: operations, pumps, motors, gear drives, electrical and telemetry circuits, chlorinators, etc.; devised a preventative maintenance program and a record keeping system; performed any work for the District, including backhoe work and line repair.

Assistant Superintendent - Assisted in all phases of management; including budgeting, personnel, purchasing contract administration and engineering design.

Superintendent - In charge of all phases of management, operations, maintenance and lab; involved in investigative programs concerning sludge management, chemical usage, maintenance projects, laboratory projects with the objective of saving money while improving quality.

C. Billy L. Gibson Company

1981 - 1987

Owner and Operator - Specialized in operations and maintenance of small package plants for trailer parks, shopping centers, small school districts and apartment complexes; worked on all types of blowers, pumps, motors, gear reducers and chlorination systems; re-furbished water and wastewater treatment plants to bring them in compliance with the State and local authorities.

3. I have been working in the fields of water, wastewater and sludge treatment, including clarification of water and wastewater and dewatering of sludge.
4. I should be regarded as having not only ordinary skill in the art of water and wastewater treatment and clarification, but I should be regarded as having expert knowledge as to design and operation of water and wastewater treatment processes and facilities. I have had such skill in the art and expert knowledge since 1978. What should particularly qualify me to speak on the subject is: I am employed by the City of Marshall, Texas, as Water Treatment/Production Manager in the field of water and wastewater treatment.

5. Marshall, Texas is a city of approximately 26,000 population and has 1 water and 1 wastewater treatment facility. These facilities in total treated 4,380 million gallons of water in 1998.
6. ClearValue is an operating company, providing services and products for water, wastewater and sludge treatment. ClearValue is the only entity at the present that is allowed by the City of Marshall, Texas, as the sole provider of the process of clarification of water and wastewater by using the combinations in the CV1700 series presented by ClearValue.
7. Neither I nor the City of Marshall have any income from the application of or any ownership or rights of the invention marketed by ClearValue. As far as I know, Richard A. Haase is the sole owner of the patent application number 08/931,167 and ClearValue is the sole licensee of the patent application.

FACTORS FAVORING NON-OBVIOUSNESS OF THIS PATENT INVENTION

8. Texas and in particular the Gulf Coast area, is a center of application of expertise in the field of water and wastewater treatment.
9. With numerous industries being centered and/or operating significant projects and plants in Texas (including a considerable number of petroleum and petrochemical companies), the treatment of water, wastewater and sludge is a major issue in Texas.
10. Treatment and clarification of water, wastewater and sludge are not solely limited to Texas and have worldwide application. As a result, any improvement and/or cost saving in results obtained for treatment and clarification of water, wastewater and sludge have significant impacts worldwide.
11. Removal of color and Total Oxygen Content (TOC) is historically accomplished by either pretreatment or enhanced treatment with chorine, chlorine dioxide or treatment with Granular Activated Carbon (GAC). GAC is very expensive. The

remaining option is overtreatment with alum. Overtreatment with alum leads to aluminum in the final water product. Aluminum is linked to Alzheimer's Disease. Therefore, limits of 0.2 ppm, depending on the aluminum content are being imposed. Application of such limits, eliminates alum overtreatment as an option. In 1987, there were no demands on water production facilities for either color or TOC removal and there were no limits on the aluminum concentration in the final water. In 1987, the final turbidity targets, depending on the location, were 1.0 or 0.5. Pre-treatment of water containing organics with chlorine creates tri-halo-methanes (THM) which are known cancer causing and birth defect causing chemicals. Also, enhanced water treatment of water containing organics with chlorine creates THM. In 1987, many plants were still pre-chlorinating. Today, there are THM regulations that nearly eliminate pre-chlorination or enhanced chlorination activities. To stay within allowable THM guidelines (60 ppb), water production facilities have stopped pre-chlorination and only perform post-clarifier/pre-filter chlorination. Therefore, the capability of improving weir turbidities, TOC and color removal and thereby enhancing alum performance by pre-chlorination has been outlawed by default.

12. As of 1999, water treatment targets and regulations are much more restrictive:
 - A. The EPA is driving turbidity goals down to 0.1 NTU for biological removal. However, many plants do not have the capability for such biological removal, making implementation of water treatment regulations difficult. Thus, the implementation of the regulations is currently being delayed.
 - B. The EPA and the State of Texas have implemented a program for turbidity targets of 0.3 NTU or less.
 - C. At 0.1 NTU or less, the biological organism crypto-sporidium, that caused sickness and death of the Minneapolis area, is eliminated.
 - D. To achieve the above turbidity targets, the turbidity of water from the clarifier must be at or below 1.5 NTU and preferably below 1.0 NTU as filter performance is usually 15:1 with an operating range of 10:1 to 20:1 ($1.2 \text{ NTU} / (15:1) = 0.80 \text{ NTU}$, with 1.2 NTU being an acceptable turbidity of water from clarifiers).

- E. High weir turbidities lead to decreased filter life and increased backwashings of the filters. A single filter backwash can cost a facility from \$60 to \$120 depending on the gallons of water used and the cost of plant operation. A plant will normally have one filter per 0.75 MGD of water produced and will achieve 30 to 60 filter hours with alum. With chemical combinations formulated by Richard A. Haase and marketed by ClearValue, Marshall, Texas has already obtained 90 and is progressing to define the limit in filter hours. Filter backwash water is completely treated water that is used for filter backwashing and then discarded. With alum pin-floc decreasing filter life, some plants use up to 5 percent of plant production is used for filter backwashing.
13. In 1999, there is a secondary standard of 15 color units in the final water production in the State of Texas. The State of Texas has implemented a program of 45% TOC removal. This is a significant increase over a previous requirement of 33% TOC removal.
14. Test results were run for comparing the performance of other processes and systems and of the present invention. Unexpected results were achieved by tests based on the application of the process presented by ClearValue when compared with tests based on the application of other processes and systems. Some tests were run at Marshall, Texas. The tests were run on February 18, 1999 at the drinking water treatment facility of Marshall, Texas. The non-obviousness and advantages of the test results are accurately shown in the Water Production Jar Test Report.
15. As an individual with expert skill in the art, to my knowledge, the value of using ratios and molecular weights of chemicals, as demonstrated by ClearValue, were not disclosed previously neither in any patent, nor in any printed publication, nor as common knowledge, nor as prior art. In addition, the differences between the invention presented by ClearValue and the prior art are such that the invention as a whole would not have been obvious at the time the invention was made to a person having ordinary skill in the art to which said invention pertains. Previously, it was not known that considerable improvements in the quality of the

treated water and wastewater could be obtained by altering the combinations and molecular weights of the existing chemicals. It certainly was not obvious to a person of ordinary skill in the art of water and wastewater treatment that the results could be optimized by using different combinations and molecular weights of the existing chemicals.

16. Unexpected results were obtained from water and wastewater clarification tests run by Richard A. Haase and based on the present invention. Such unexpected results have led to the development of an interest by the City of Marshall in and ultimate employment by the City of Marshall of the process presented by ClearValue for the treatment and clarification of various types of drinking water, ~~and wastewater.~~
17. In October of 1998, the City of Marshall had a significant water treatment challenge relating to raw water quality and available chemical method of treatment. At that time the water production facility was UNABLE to produce water at less than 0.5 NTU (~~must~~^{much less} able to produce at less than 0.3 to 0.1 NTU) and 15 standard color units. We tried all known chemical methods of treatment in the laboratory.
With operation of the present invention, unexpected results were achieved with the plant in operating permit within hours of introduction of the present invention. Further, the plant operates better today in all types of water than it ever had in the past.
Today, Marshall produces water at less than 0.1 NTU, always. Previously our best performance was 0.13 NTU and was normally 0.15 to 0.25 NTU during good water conditions.
18. ~~Testing and experience~~^{Production} have proven that any considerable improvement in water and wastewater is valued greatly. Improvements based on the present invention could lead to many customers and to rapid growth of ClearValue for clarification of water and wastewater. I expect that the number of interested sites will increase rapidly within the next few years. Due to being the sole licensee of the invention, ClearValue should establish a significant presence in the State of Texas and should have increasingly significant sales in other states.

19. Due to the unexpected, non-obvious results obtained by the application of the present invention, many facilities, municipalities and systems in various states should become interested in starting to use the present invention marketed by ClearValue for water and wastewater treatment and clarification.
20. The City of Marshall, Texas, has started to use the present invention upon permission from and under supervision of ClearValue since the use of CV3650 in May of 1997 and the use of CV1703 in October of 1998.
21. It normally takes at least nine to twelve months, even over a year, to market an existing system, process or good in this industry. Therefore, from a business development perspective, finding clients for a new invention in less than one year is remarkable, particularly since in water and wastewater treatment industry one must perform numerous tests and presentations for each facility and must obtain results that satisfy the government regulations and the set standards for each facility before the facility becomes interested in using the system, process or good.

FURTHER AFFIANT SAYETH NOT.

Billy L. Gibson
BILLY L. GIBSON

Sworn to and subscribed before me on the 30 day of March,
1999.

Kathy Ann Bradshaw
Notary Public, State of Texas

My Commission Expires: 4-23-99



Official Seal
KATHY ANN BRADSHAW
Notary Public
State of Texas
My Commission Expires 4-23-99

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